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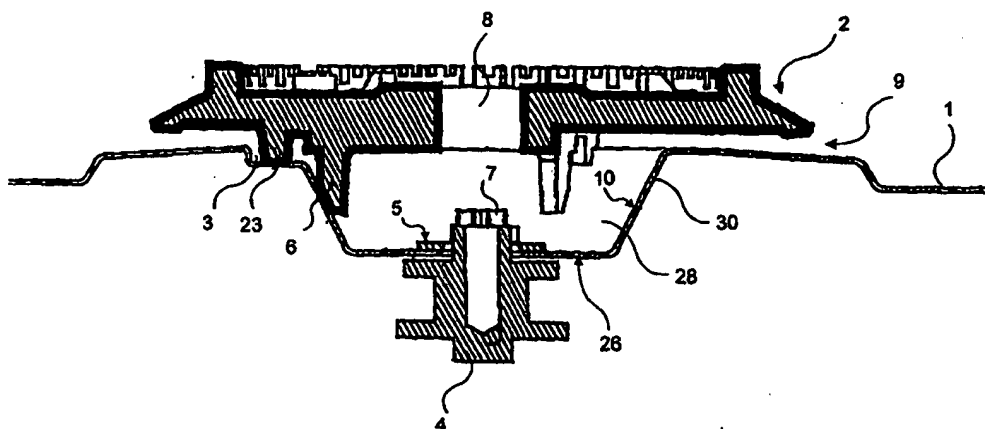
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(54) Title: DEEP DRAWN BURNER MECHANISM



(57) Abstract

The present invention concerns with separate centering of burner tap (2) and injector holder (4) in deep drawn burner mechanisms which are used in domestic gas cooking apparatuses, on a common center (longitudinal axis of injector). Centering of burner tap (2) is effected by centering legs which are located beneath thereof and which are leant of lateral inner surface (10) of mixture chamber. Turning around of its own axis of burner tap after it was sat into its proper place or moving on horizontal surface has been prevented by settling housings (3) into which sitting legs (23) beneath it are entered and which is formed at inlet of mixture chamber. Injector holder (4) is centered on inferior central gap (18) of mixture chamber by centering elements (12) which are extending vertically towards a sitting surface (22) it has and which are passed through gaps (19) on the bottom of mixture chamber.

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## DEEP DRAWN BURNER MECHANISM

The present invention is concerned with domestic gas cooking apparatuses where burner (cooking) tap (2) and injector (7) are positioned in an air-gas mixture chamber (10) which is formed by shaping cooking (burner) plate (1) in a manner that would provide flame balance and kept at that position, and more particularly with such cooking apparatuses having a burner plate (1) consisting of a pot-type gas-burner at least.

It is known that there are certain applications whereby air-gas mixture chamber is formed by deep drawing burner plate rather less number of component is utilized by shaping burner plate, assembling is facilitated, and burning yield is increased. Some of these applications suggest such solutions aiming of burner tap become centered to injector axis by preventing horizontal movement of burner tap.

Injector in a cooking apparatus which takes place in a European Patent Application. No. EP 0751352 A1 is held by a tube-shaped component of an injector carrier passing through inferior orifice of plate deep drawn. This tube shaped component consists of some teeth and is attached to burner plate deep drawn with a nut or a part similar thereto. Burner tap in the same apparatus consists of some wings providing central channel of burner tap become centered on longitudinal axis of injector. These wings which provide centering are leant on outer edge of the nut. Because of an additional part is needed to hold the wings and also because of high temperature, the nut welds injector holder which is made by aluminum injection in general, so, resulting difficulty of taking it out of that component, form significant disadvantages.

Burner tap is fixed on burner plate deep drawn through lateral positioning wings. Positioning wings sit on burner plate. Turning of burner tap around longitudinal

axis of the injector is prevented by a sparking plug extending vertically on burner plate. A notch on external edge of burner tap prevents the turning of burner tap by serving as housing for the plug. As a disadvantage, there is a need for a sparking plug on burner plate or a similar part for preventing of turning.

Burner tap of the apparatus as referred to in the patent application, No. GB 2256268 A consists of radial wings. It is suggested that a limiting circular housing should be formed to make these radial wings be sat tightly by shaping burner plate. A notch on external edge of burner tap prevents the turning of burner tap by serving as housing for the plug. As a disadvantage, there is a need for a sparking plug on burner plate or a similar part for preventing of turning.

But this housing has a vertical and narrow edge section rising from the surface of the plate. As it is known by expert people in the field of the same technique, usage of steel sheet as burner plate in general (with an approximate thickness of 1 mm.) makes almost impossible of obtaining such a structure by shaping sheet plates in the press. Hence, forming such a structure on burner plate having that type of limiting and surrounding walls could be evaluated as a more difficult and complex process. Even if it is considered as an other alternative that an additional component in ring form would be welded burner plate for forming the housing, it could easily be estimated that process would cause some problems during the phase of enamel coating of the plate and affect adversely the esthetical integrity of the product.

A subject of the present invention is to realize a deep drawn burner plate consisting of structural details which could easily be shaped in the press and which is capable of preventing the turning of burner tap around its own axis, after it has been made sat into its housing of moving on horizontal surface, even if any sparking plug extending on burner plate vertically or any technical element did not exist.

Another aim of the invention is to give effect to a deep drawn burner mechanism with a burner tap consisting of certain structures which could provide the

centering of burner tap with longitudinal axis of injector without the need for an additional component for any supplementary shaping which renders the production difficult in deep drawn burner plate or to hold the burner tap.

To obtain a cooking apparatus whereby injector holder could be fixed easily and securely on the bottom of mixture chamber on deep drawn burner plate and also could easily be dismantled where needed, is another purpose of the invention.

A preferred form of deep drawn burner mechanism which has been created for attaining such purposes of the invention has been introduced by attached figures as of being a sample with regard to invention, and invention has been explained below with reference to these figures.

Said figures are as follows;

- Figure 1- It is a sectional view of deep drawn burner mechanism as components thereof are in unified form.
- Figure 2- A general view of burner mechanism with its components are in disintegrated form.
- Figure 3- A general top view of burner plate at Figure 2 with injector holder is in fixed form.
- Figure 4- A general under view of burner tap as shown in Figure 2.
- Figure 5- A general view of injector holder and locking sheet.
- Figure 6- A figure showing a centering leg as an alternative, positioned in an air-gas mixture chamber with vertical walls.

Invention is principally referred to in the details of positioning of burner tap (2) and injector (7) in air-gas mixture chamber (28) which is formed by shaping burner plate (1) (through deep drawing process) in such a form providing flame balance and keeping it in that position.

Part of deep drawn burner plate (1) forming mixture chamber (28) and other parts where burner tap (2) is sat (3) have a section profile which could be easily obtained under press. Especially side wall (30) of mixture chamber has a section profile broadening upward from the bottom (Figure 1).

Placement of burner tap (2) into air mixture chamber (28) in a suitable position is effected by centering leg (6) and sitting leg (23) both of which are located beneath the burner tap (2). Sitting leg (2) keep burner tap (2) at such a height whereby a suitable primary air inlet space would be created between burner plate (1) and burner tap (2). There are settling housings (3) on burner plate (1) into which sitting legs are inserted. Such housings could be made in the press easily with an appropriate depth in order to prevent the horizontal movements of sitting legs (23). In preferred arrangement of invention there are three sitting legs (23) and three settling housings (3). Legs (23) are placed below burner tap and housings on upper edges of mixture chamber on burner plate with equal angular intervals (Figure 3 and Figure 4). These housings prevent horizontal movement of sitting legs (23) which have a pressed structure from both sides in such a way particularly not permitting burner tap to turn around its own axis. Number of housings and legs and angular value between them could be different than that of the preferred arrangement.

Burner tap (2) could consist of some orifices (24 and 25) through which a sparking plug which extends vertically on burner plate according to the model of product or a thermic element could pass. These orifices contribute to restrict the lateral movements of burner tap, but it is also observed that settling housings (3) in the mechanism under present invention have satisfactorily fulfilled that function (Figure 2).

There is a centering leg (6) between each sitting leg (23) and the center of burner tap. In preferred arrangement of the invention which are shown in attached figures these legs are located on the direction of the same radius. However, centering and sitting legs (6 and 23) could be in more different positions in comparison with each other; be in different quantity and angular distance within themselves. Each

of centering leg (6) has an edge (29) in the same inclination with side wall of mixture chamber (30) (Figure 4). This edge (29) approaches to inner lateral surface of air-gas mixture chamber (10) as close as touching it while burner tap (2) is sat into settling housings (3) on burner plate (Figure 1). Legs which are in that close positions to inner surface (10) naturally provide the intersection of burner tap central gap (8) with vertical axis of inferior central gap of air-gas mixture chamber (18). In other words, when centering legs (6) are leant on inner lateral surface (10) of air-gas mixture chamber, then burner tap (2) becomes centered with longitudinal axis of injector (7).

It was mentioned above that a shape is given side wall of mixture chamber (30) narrowing downwards the bottom, by taking facility in production into consideration. Contrarily, side walls being upright is an alternative though it is clear that it makes production more difficult. In such case, centering legs (6) do not necessarily have an inclined edge; legs could lean against lateral inner surface of mixture chamber (10) by extending downwards, with their side edges for example (Figure 6). Several arrangements could be achieved similar to that of shown in Figure 6 as sample, for centering burner tap by centering legs (6) touching or leaning on lateral internal surface (10).

There is an inferior central (4) gap (18) at the bottom of mixture chamber (28) on burner plate. Injector holder which is produced by aluminum injection method is securely fixed on burner plate (1) by inserting through that gap. Injector holder (4) consists of a sitting surface (22), two centering elements (12) which extend vertically against that surface, and a central locking extension (16) (Figure 5). In the arrangement described in attached figures, cylindrical pins are used preferably as centering element (12). There are claw channels (17) in both sides of the part of locking extension (16) remained within mixture chamber. These channels serve in securely fixing of injector holder (4) by locking on burner plate. There are two pin gaps (19) around the inferior gap (18) of air-gas mixture chamber, diameters of which permit only centering pins in question (12) could pass through. While injector holder (4) is fixed on burner plate (1), locking extension is passed through

inferior gap (18) of mixture chamber, and centering pins (12) through pin gaps (19). After sitting surface (22) is fully sat on inferior surface (26) of burner plate, a ring formed locking sheet (5) is placed over the elements (12, 16) which were passed through inferior gap (18) from inner part of mixture chamber. Thus, injector holder (4) is being fixed in such a manner that it could move neither laterally to burner plate (1) nor angularly around its own axis, and being center to air-gas mixture chamber (28).

Inner edge of locking sheet (5) consists of locking claws (13) which have an harmonized shape with claw channels (17) on locking extension. Locking sheet (5) is rotated around its own axis for a given degree after it was passed through such claw channels (17). Angle of rotation is limited with detaining edges (14) located on outer edge on the sheet (5) and caused the sheet to be leant against centering pins (12). Assembling splits (15) it has, provide its getting locked by a simple turning movement, after locking sheet (5) is passed over the elements (12, 16) which were passed through inferior gap (18) (Figure 3).

**DESCRIPTIONS CORRESPONDING TO PART NUMBERS IN THE FIGURES ARE AS FOLLOWS :**

1. Burner plate
2. Burner tap
3. Settling housing for burner tap
4. Injector holder
5. Locking sheet for injector holder
6. Centering legs
7. Injector
8. Burner tap central gap
9. Primary air inlet space
10. Lateral inner surface of air-gas mixture chamber
11. Grill leg housings
12. Injector centering pins
13. Locking sheet claw



14. Locking sheet detaining edge
15. Locking sheet assembling split
16. Injector holder central locking extension
17. Injector holder locking claw channel
18. Mixture chamber inferior central gap
19. Burner plate pin gap
20. Thermic element link orifice
21. Sparking plug link orifice
22. Injector holder sitting surface
23. Burner tap sitting legs
24. Burner tap plug gap
25. Burner tap thermic element gap
26. Inferior surface of air-gas mixture chamber
27. Burner hat
28. Air-gas mixture chamber
29. Centering leg inclined edge
30. Mixture chamber side wall

## CLAIMS

1. Domestic gas cooking apparatus consisting of an air-gas mixture chamber (28) formed by shaping burner (cooking) plate (1) through deep drawing, having an inferior central gap (18) at its bottom; a burner tap (2) which is sat into that chamber by more than one sitting legs (23) and which has a central gap in its middle part; and a gas injector holder (4) which is fixed by centering on inferior central gap; and characterized by more than one centering legs (6) which provide intersecting of vertical axis of burner tap central gap (8) located beneath burner tap with those of central gap of air-gas mixture chamber, and more particularly, a deep drawn burner mechanism for cooking apparatuses having a burner plate consisting of at least a pot type gas burner.
2. A deep drawn burner mechanism as in Claim 1, formed by shaping burner plate, located in inlet part of mixture chamber (28) on burner plate and sitting legs (23) at burner tap are inserted there into, and characterized by settling housings (3) amount of which are as much as these legs.
3. A deep drawn burner mechanism as in Claim 2, characterized by sitting legs (23) being preferably three.
4. A deep drawn burner mechanism as in Claims 2 and 3, characterized by sitting legs (23) being equal angular intervals to each other.

5. A deep drawn burner mechanism as in Claims 1 to 4, characterized by centering legs (6) being preferably three.
6. A deep drawn burner mechanism as in Claims 1 to 5, characterized by centering legs (23) being preferably equal angular intervals to each other.
7. A deep drawn burner mechanism as in Claims 1 to 6, characterized by centering legs (6) being placed in such a way that preferably one leg is on linear which unites each sitting leg 823) with the center of burner tap.
8. A deep drawn burner mechanism as in Claims 1 to 7, characterized by side wall of mixture chamber (30) preferably having a section profile broadening upward from the bottom of the chamber.
9. A deep drawn burner mechanism as in Claim 8, characterized by each of centering legs (6) having an inclined edge standing so near to lateral internal surface (10) of air-gas mixture chamber almost touching it, while their inclinations are the same with mixture chamber side wall and burner tap (2) was sat into settling housings (3) on burner plate.
10. A deep drawn burner mechanism as in Claims 1 to 7, characterized by side wall of mixture chamber (30) having a vertical section profile.
11. A deep drawn burner mechanism as in Claim 10, characterized by center legs (6) being extended downwards either vertically or with a certain inclination and touched upon or leant against lateral inner surface (10) of mixture chamber anyway.

12. A deep drawn burner mechanism as in Claims 1 to 11, characterized by injector holder (4) having centering elements (12) passed through the gaps (19) opened around inferior central gap (18) mixture chamber for themselves and extending vertically towards a sitting surface (22) locating at injector holder (4) and also having a locking extension passed through inferior central gap of mixture chamber.
13. A deep drawn burner mechanism as in Claim 12, characterized by number of centering elements (12) being preferably two.
14. A deep drawn burner mechanism as in Claims 12 and 13, characterized by centering elements (12) being cylindrical pins.
15. A deep drawn burner mechanism as in Claims 12 to 14, characterized by central locking extension (16) having claw channels (17) in both sides.
16. A deep drawn burner mechanism as in Claims 12 to 15, characterized by a ring form locking sheet (5) passed over the elements (12, 16) which are passed through said gaps, from inner side of mixture chamber and locked by turning a specified degree around its own axis, consisting of locking claws (13) on its inner edge which have a form harmonized with claw channels (17) on locking extension, and on its outer edge detaining edges (14) which limit the turning angle by providing it to be leant up against centering elements (12) and mutually opened assembly splits (15).

1 / 4

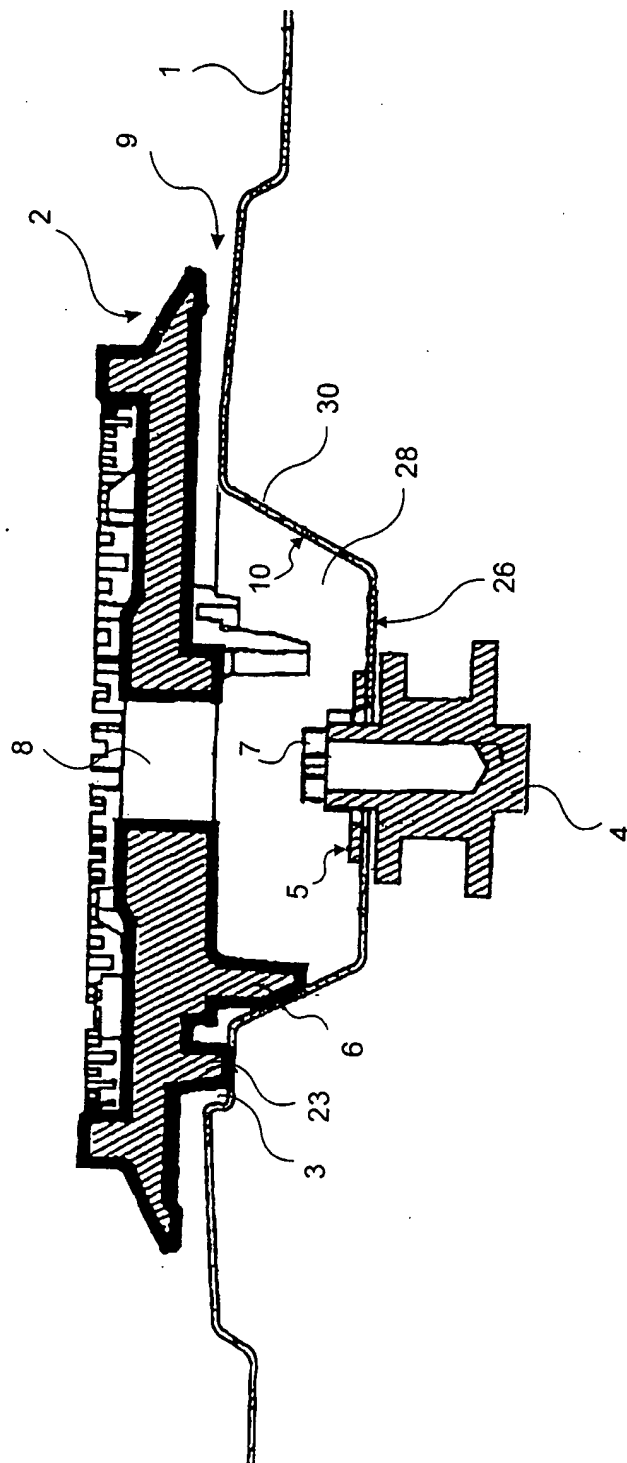
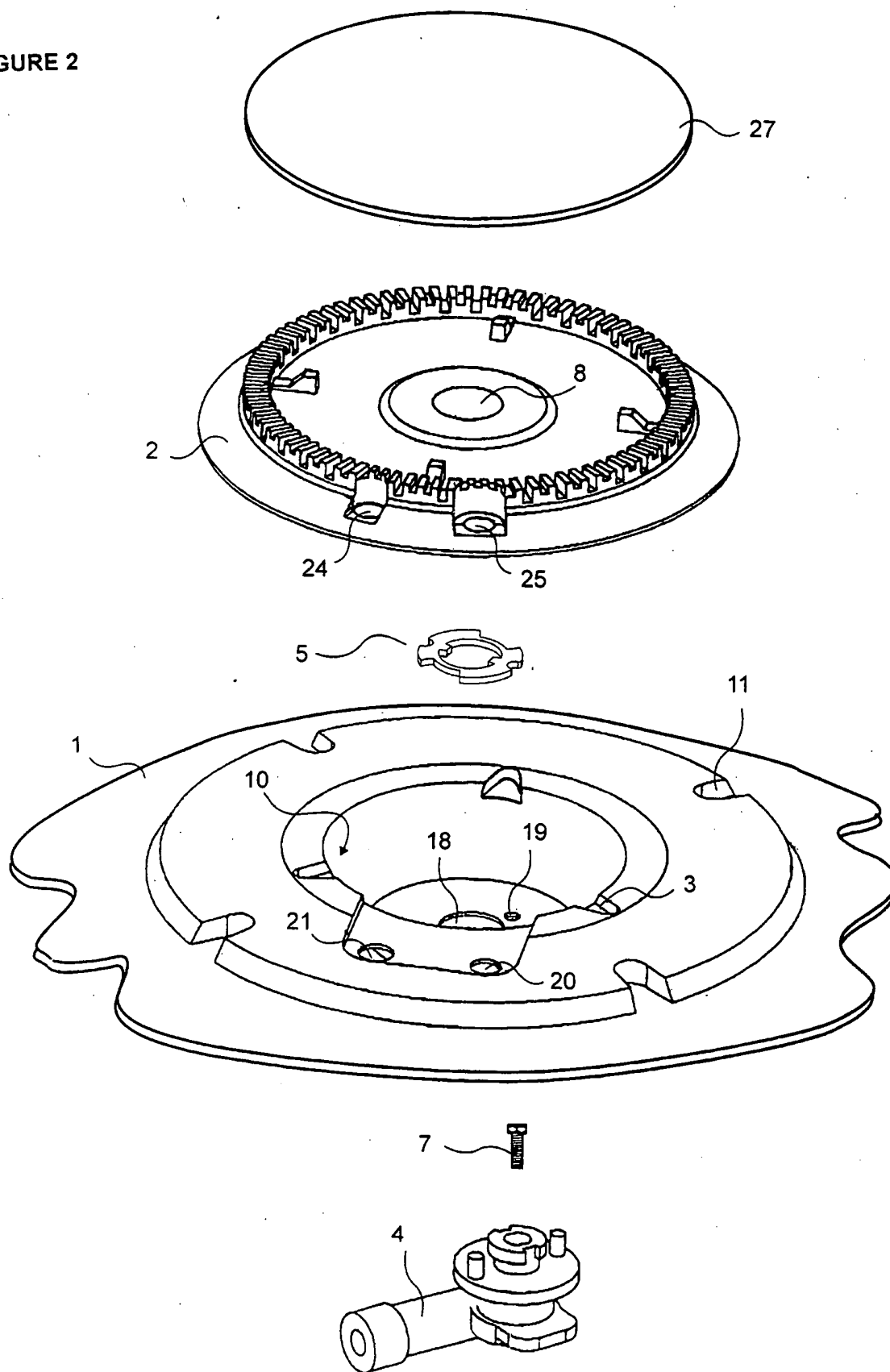


FIGURE 1

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FIGURE 2



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FIGURE 3

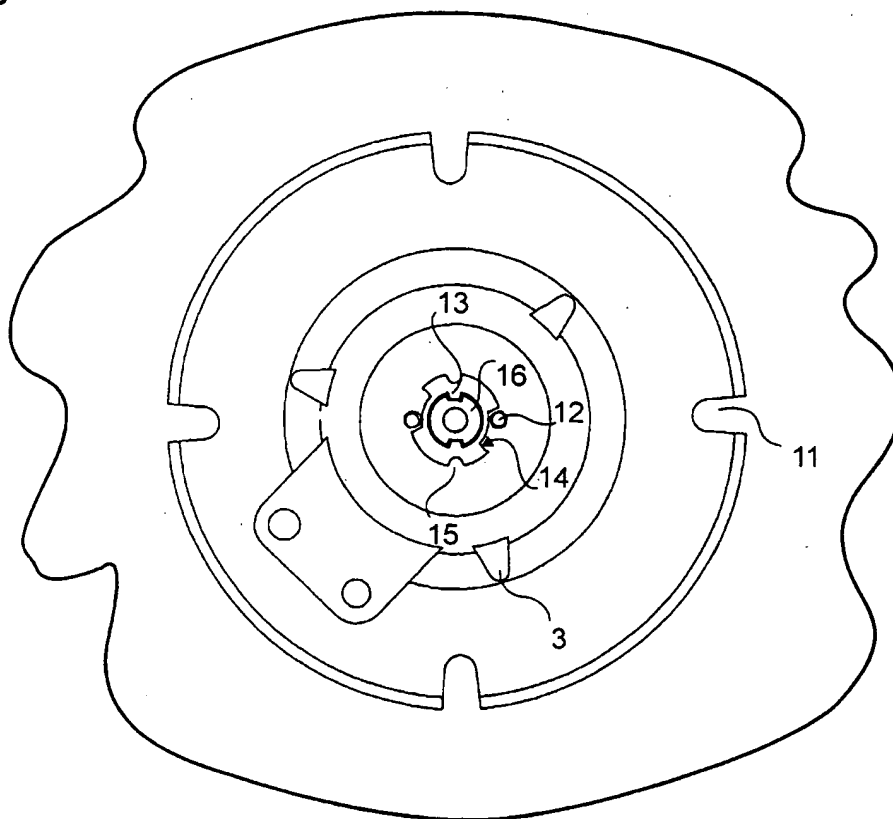
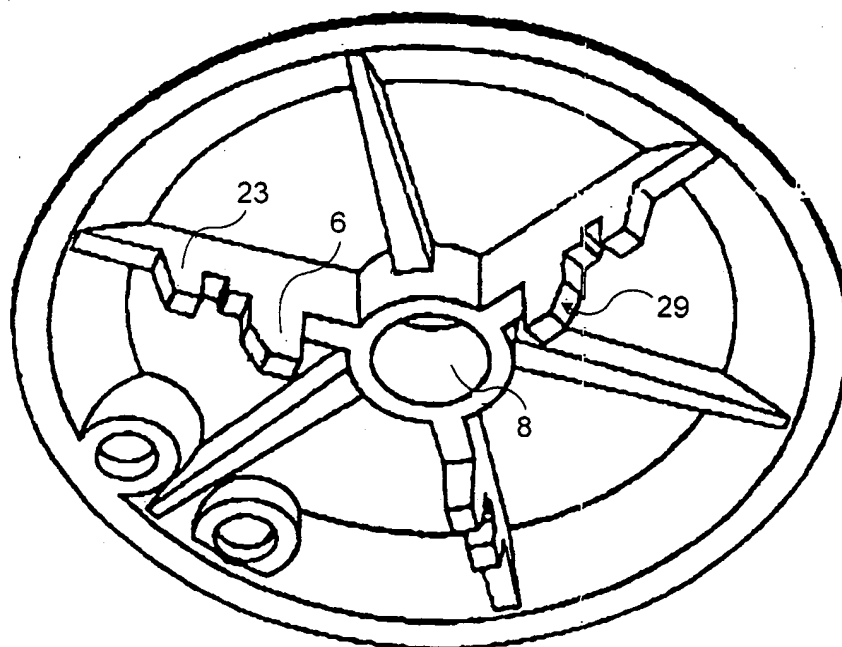


FIGURE 4



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4 / 4

FIGURE 5

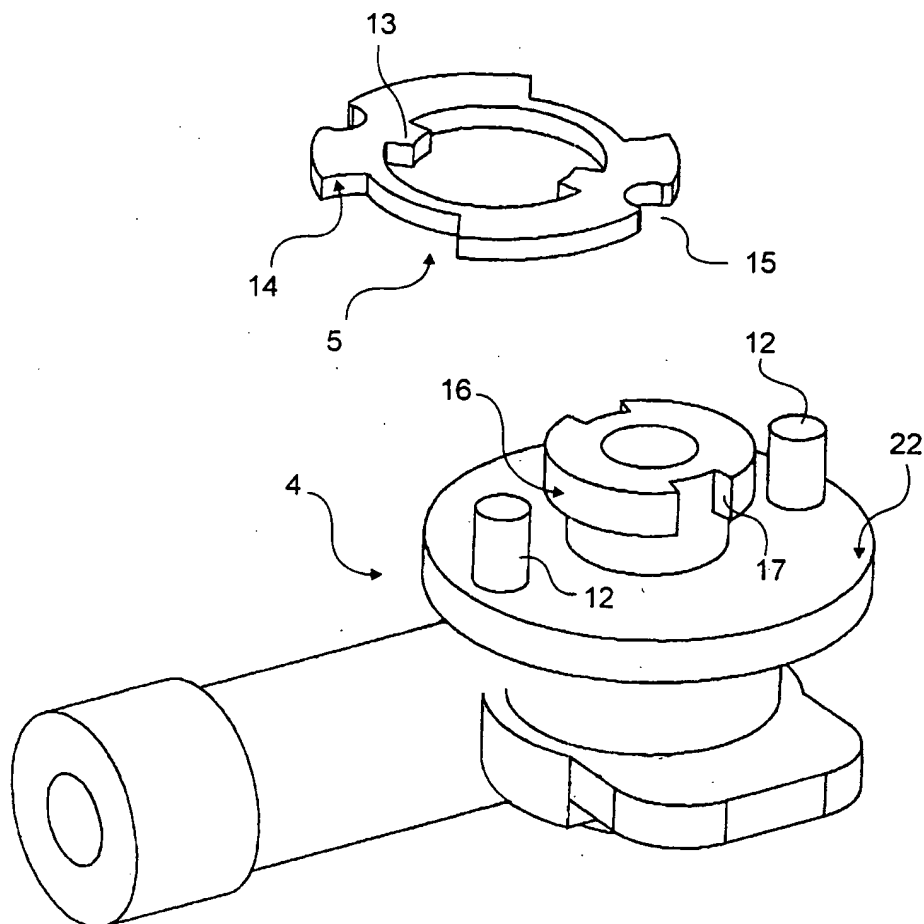
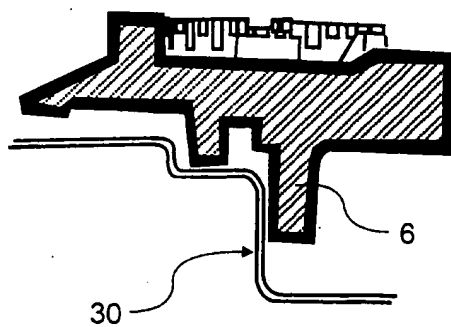


FIGURE 6



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# INTERNATIONAL SEARCH REPORT

International application No.  
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC <sup>6</sup> : F 23 D 14/06; F 24 C 3/08		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
IPC <sup>6</sup> : F 23 D 14/06; F 24 C 3/08		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
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<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 189 020 A (BALAY), 11 October 1987 (11.10.87).	1,2
A		3-6,8-11
Y	EP 0 694 731 A1 (EATON CORP.), 31 January 1996 (31.01.96).	1,2
A	GB 1 148 749 A (SMITH), 16 April 1969 (16.04.69).	1-3,12-16
A	GB 2 256 268 A (ZANUSSI), 02 December 1992 (02.12.92).	1,12-16
A	EP 0 751 352 A1 (CEPEM), 02 January 1997 (02.01.97)	1,8,10
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PCT/TR 98/00029

In Recherchenbericht angeführtes Patentedokument Patent document cited in search report Document de brevet cité dans le rapport de recherche	Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
GB A 2189020		DE A1 3712001 FR A1 2601117 GB A0 8708524 GB A1 2189020 IT A0 8767284 IT A 1208382	15-10-1987 08-01-1988 13-05-1987 14-10-1987 07-04-1987 12-06-1989
EP A1 694731	31-01-1996	AU A1 24925/95 AU B2 684954 BR A 9502360 CA AA 2153425 JP A2 8061615 US A 5464345 US A 5545036	08-02-1996 08-01-1998 09-09-1997 30-01-1996 08-03-1996 07-11-1995 13-08-1996
GB A 2256268		IT A0 PN 910018 IT A 1250382 DE A1 4110753 DE C2 4110753 FR A1 2660700 FR B1 2660700 JP A2 6017725 SE A0 9001266 SE A 9001266 SE B 465971 SE C 465971	13-03-1991 07-04-1995 10-10-1991 09-04-1992 11-10-1991 11-09-1992 25-01-1994 06-04-1990 07-10-1991 25-11-1991 19-03-1992
GB A 1148749		keine - none - rien	
EP A1 751352	02-01-1997	FR A1 2736143 FR B1 2736143	03-01-1997 25-07-1997